

THE ESCAPE OF *STIPA PAPPOSA*

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Abstract

A history of the occurrence of *Stipa papposa* in South Australia is given. The species is described together with notes on distinguishing features.

In the late 1930s, the early years of the Waite Agricultural Research Institute, there was considerable interest in obtaining pasture plants. In 1939 Professor H.C. Trumble travelled to America and, when visiting Prof. B.A. Madson, Division of Agronomy, University of California, Davis, arranged for a selection of seeds to be sent to Adelaide. Prof. Trumble himself brought roots of Kikuyu grass with him on the boat trip back.

A letter survives in the Waite Archives from Prof. Trumble dated 16 April 1940 to Prof. Madson and saying *inter alia* "... seeds so kindly sent from Davis on my behalf have now arrived".

A list of the species involved has not been traced but in the ADW herbarium now incorporated in AD is a specimen of *Stipa papposa* with the label "grown in a box at glasshouse W.1. Seed from Prof. Madson, Univ. Calif. Davis, coll. C.A.N.S. [= C.A. Neal-Smith] 10.i.1941."

This must have been planted later in the grass garden which consisted of numerous small plots of pasture species and used for demonstration, teaching and minor trials.

Stipa papposa was grown there for some years as another specimen labelled "Waite Inst. Grass Garden J.W. Banfield 3/4/1950" survives. It is not known how much longer it was cultivated before being dug up.

In 1968 several patches were noticed in the Waite Arboretum. This is close to the Grass Garden and was at that time grazed by sheep. Several of these were described as "large" with three others described as "few". These plants were destroyed by digging them out. The localities were all recorded as adjacent to numbered trees and in some of these early infestations no further plants have appeared.

Vegetatively the *Stipa* plants are similar to fine-stemmed *Danthonia* species and are not readily spotted unless in flower, especially when grazed by sheep. Flowering of the *Stipa* is in late summer, responding to summer rains.

During 1973, 1985, 1991, 1993–1995 at least 25 patches were recognised, some large, others small. These were all spaded out. After 1991 the Arboretum was mown and not grazed and the search for *Stipa* plants was intensified. The removal of sheep has resulted in an increase in *Danthonia* making it somewhat more difficult to spot the *Stipa*. During this period it was not recorded as naturalised as it was still confined to the Arboretum and it was hoped to eradicate it.

However in 1994 a specimen was brought in by Michael Sardo from the South Parklands bordering Adelaide. Inspection revealed about 16 plants one of which was 15–20 cm in basal diameter and probably several years old. All were spaded out.

Stipa papposa Nees, *Agrost. Brasil.* 377 (1829); Doell in Martius, *Fl. Bras.* 2, 3: 11, tab. 2 (1878); Burkart, *Fl. Ill. Entre Rios* 2: 144, fig. 47 (1969); Zuloaga et al., *Cat. Fam. Poaceae en la Rep. Argentina* 147 (1994), nom. illegit.

Calamagrostis plumosa Spreng., *Syst. Veg.* 1: 253 (1825), according to Nicora, *Fl. Patagonica* 3: 312 (1978).

Type: Montevideo [Uruguay], *Sello s.n.* (n.v.).

S. delilei Steudel, *Syn. Pl. Glum.* 126 (1854). Nom. nov. for *S. papposa* sensu Delile, *Ind. Sem. Hort. Monsp.* 7 (1849); treated as a synonym for *S. papposa* Nees by Nicora l.c.

Caespitose perennial 25–80 cm high, sometimes branched at lower nodes. *Culms* erect or geniculate at the base, terete, ribbed, 0.5–2 mm wide near the base, not compressible, glabrous, green; nodes 2–6, glabrous, exserted. *Leaf sheaths* tightly enveloping the culm, sometimes becoming loose upwards, glabrous. *Ligule* truncate, membranous, 0.1–0.5 mm long, glabrous; auricles with ciliate hairs 1.5–2.5 mm long. *Leaf blade* flat or inrolled, 4–20 cm long, 0.2–2 mm wide, glabrous or sparsely scabridulous, ribbed especially on the adaxial surface. *Panicle* 10–20 cm long, 1–3 cm wide (excluding awns), base enclosed or exserted, contracted, sparse; axis terete, angled above, glabrous, sometimes scabrous above; pedicels 2–20 mm long, flattened, scabrous. *Spikelets* 6–10 mm long (excluding awns), slightly gaping. *Glumes* membranous and translucent, 1-nerved, 5–7 mm long, 0–2 mm shorter than the lemma or rarely slightly longer, the lower 0.5–2 mm shorter than the upper, narrow, glabrous. *Lemma* narrowly fusiform, 6–9 mm long (including callus), smooth, light brown or pinkish, scabrous except on the distal 1.5–2 mm where there are 4–8 mm long spreading white hairs; coma absent. *Callus* 1–1.5 mm long, scarcely curved at the apex, sericeous with c. 0.5 mm long white hairs extending in a line shortly up the lemma. *Awn* 1.5–3 cm long, twice bent, c. 0.2 mm wide near the base; column 3.5 mm long, minutely and sparsely scabrous; bristle minutely scabrous. *Palea* c. 20% the length of the lemma, hyaline. *Anthers* c. 3.5 mm long. *Caryopsis* narrowly fusiform, 3–5 mm long. Fig. 1.

Diagnostic features

Within species of *Stipa*, and the allied genus *Nassella*, native or naturalised in Australia the long hairs on the lemma are unmistakable, Clayton & Renvoize (1986) refer to the glumes' being shorter than the lemma as being unique, although in a few specimens examined the glumes were actually longer.

Vegetatively, in the field, the growth form resembles that of a *Danthonia* but the *Stipa* can be distinguished by the somewhat wiry stems that remain green and photosynthetic after shedding its seeds.

The species is illustrated in both Caro (1966) and Caro & Sanchez (1973) the latter including epidermal and leaf section details.

Distribution

It was first collected in Montevideo (at one time in Brazil, but currently in Uruguay) but has since been collected in southern Brazil, Uruguay, central and eastern Argentina and Chile. The only previous record outside of South America found was from Cape Town (1963 and 1980) in Gibbs Russell *et al.* (1990). In South Australia only in a south eastern segment of Adelaide.



Fig. 1. *Stipa papposa* Nees. A, habit; B, nodes; C, two views of ligule; D, spikelet; E, spikelet enlarged; F, glumes; G, tip of lemma and callus; H, section through lemma and palea. (C.A.N. Smith 4317; AD 98667535).

Nomenclature

Nees (1829), in transferring *Calamagrostis plumosa* Spreng. to *Stipa*, failed to retain the epithet *plumosa* and renamed the species *S. papposa* which is, therefore, an illegitimate name.

Stipa plumosa was subsequently taken up by Trinius (1836) for another species so that Sprengel's epithet can no longer be used in *Stipa*. It is not known whether or not by 1829 Trinius already intended to use the name *plumosa* but, even if Nees avoided the combination for this reason, this would not make his new name legitimate.

It is possible that *S. delilei* Steudel may be the earliest available name, but it would be preferable for someone with a greater knowledge of the species and its associated literature to make a decision on the correct name. It is proposed that the apparently illegitimate name, *S. papposa*, be used until all taxonomic and nomenclatural issues (possibly including conservation) have been fully considered.

Other introduced species

The genera *Stipa* and *Nassella* appear closely related and some species of *Stipa* have recently been transferred to *Nassella*. Despite the cosmopolitan distribution of the large genus *Stipa* and the more restricted *Nassella*, it is of interest that seven of the species now naturalised in Australia come from South America and the eighth from southern North America. The potential for species of those genera to become established in Australia is demonstrated and now reinforced by the difficulty in eradicating *Stipa papposa*. The present record Harden (1993), Walsh & Entwistle (1994) and Simon (1993) is as follows:-

Nassella hyalina (Nees)Barkworth [*Stipa hyalina*] – NSW, Victoria
N. leucotricha (Trin. & Rupr.)Pohl [*Stipa leucotricha*] – Victoria
N. megapotamica (Spreng. ex Trin.)Barkworth [*Stipa megapotamica*] – NSW
N. neesiana (Trin. & Rupr.)Barkworth [*Stipa neesiana*] – NSW, Victoria, S.A.
N. trichotoma (Nees)Hack. ex Areh. [*Stipa trichotoma*] – NSW, Victoria, Tasmania
Stipa brachychaeta Godr. – NSW, Victoria, Tasmania
S. caudata Trin. – NSW, Victoria, Tasmania
S. papposa Nees – S.A.

Specimens examined

SOUTH AUSTRALIA: *Banfield s.n.*, Waite Institute grass garden, 3.iv.1950 (AD); *Sando s.n.*, South Parklands near Parklands Creek west of Hutt Road, 31.xii.1994 (AD); *Neal-Smith s.n.*, Grown in box in glasshouse, Waite Institute; seed from Prof. Madson, Calif. Univ., 10.i.1941. (AD); *Symon 15232*, Waite Arboretum adjacent to trees, 43B/46, i.1994 (AD, BRI, CANB).

ARGENTINA: *Yuan B. Daguerre 239*, pdo. Las Flores, 2.xii.1926 (AD); *Dr P. Dusén s.n.*, Prov. Buenos Aires, de la Ventana, 29.xi.1904 (AD).

CHILE: *O. Boelcke 3945*, prov. Aconcagua, Zapallar, cerro Francés, 4.i.1949 (AD).

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